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Surgical Physiology of the Colon

Triparanol and the Coloproctologist

Surgical and Non-Surgical Uses of a Rectal Suppository

Ulcerative Colitis

The Ano-Transabdominal Approach to Colon Polyps

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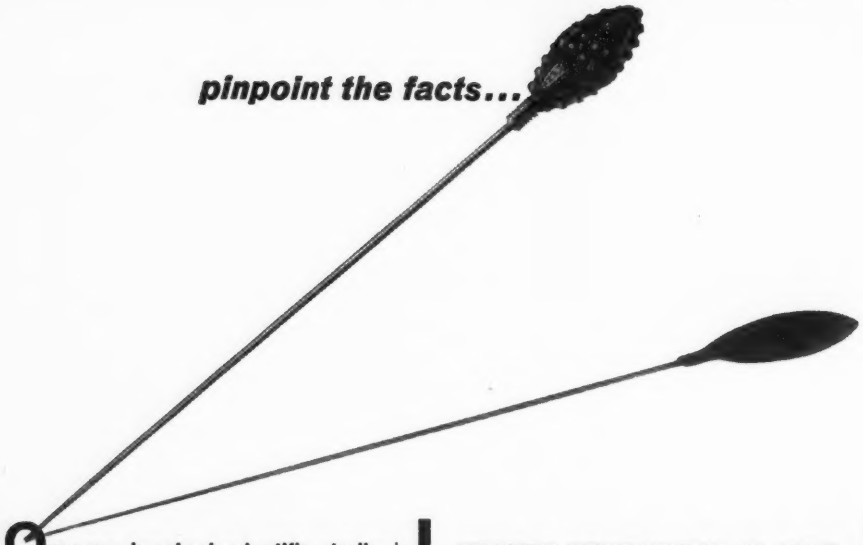

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Surgical Physiology of the Colon

STANLEY MIKAL, M.D., F.A.C.S., D.A.B.S.
Boston, Massachusetts

The surgical physiology of the colon will be discussed from the practical point of preparing the patient for surgery, with emphasis on the body as a whole, as well as the diseased colon.

PROTEIN—Most patients undergoing surgery of the colon for cancer, ulcerative colitis, or diverticulitis, are essentially deficient in proteins. Usually these patients are prepared for operation by the administration of fluids, electrolytes, transfusions, and antibiotics. Rarely is any attention paid to correction of their protein deficiencies. This fault is also carried through into the postoperative period. As a result, patients are not given what they need most of all to rebuild their bodies, namely, protein.

Under normal conditions, 10% of the calories required each day by the body should be protein. An average adult needs 70 grams of protein daily, or one gm./kilo.[1] These protein requirements apply to normal individuals and are much higher for sick patients.[2]

Terms such as hypoproteinemia, hypoproteinism, negative and positive nitrogen balance, are used to properly appraise the protein requirements of a patient. Hypoproteinemia means low serum proteins. Hypoproteinism means low tissue proteins. Negative nitrogen balance is a state of increased protein catabolism, wherein the breakdown of tissue protein is greater than its replacement. Positive nitrogen balance is a state of increased protein anabolism where more protein is incorporated into tissues than is being broken down. Nitrogen balance means that the breakdown and replacement of body proteins occur at an equal rate, or that catabolism and anabolism are in equilibrium with each other. In a study of

Dr. Mikal is Senior Clinical Instructor in Surgery, Tufts University School of Medicine, Boston, Massachusetts.

protein alterations in the body, Whipple formulated certain rules which can be called "postulates."[3] These are: (1) Serum and tissue proteins are in equilibrium with each other. (2) During catabolism, serum proteins are depleted before tissue proteins. (3) During continued catabolism serum protein levels are maintained at the expense of tissue proteins. (4) Anabolically, serum proteins are replaced before tissue proteins.

Most of the synthesis of proteins occurs in the liver and lymph nodes. After synthesis the proteins are transported by the blood stream to various cells in the body. The liver is also a storehouse for plasma proteins. Forty percent of its total protein content is available for conversion into serum proteins. Other sources of supply of serum proteins are muscles, connective tissues and fasciae.

Patients with hepatic metastasis, hepatomas or cirrhosis, have impaired protein syntheses and consequently their livers are depleted of protein. They display low total serum proteins, low A/G ratios, and wasting of tissues. They tolerate surgery poorly and are prone to all sorts of complications. Clark and his co-workers introduced a concept of "chronic shock" to explain these phenomena.[4] The basic components of this syndrome are weight loss, decreased blood volume, low plasma proteins and an increase in interstitial fluid. Elderly people also show these features because of inadequate intake, or faulty assimilation of food. Rhoads showed that the average patient with colonic cancer has a blood volume deficit of 800 to 1000 cc's.[5] This deficit in blood volume should be corrected before operation; otherwise, any loss of 500 cc's. or more of blood during operation could precipitate shock or anoxic complications.

Our major aim is to get protein-starved patients into shape for surgery. To do this certain criteria for protein metabolism must be followed. The first such criterion, is "Elman's caloric rule," which states that if caloric requirements are not met, tissue proteins will be burned for energy.[6] The second criterion is "Elman's rule of minimal protein maintenance," in which 6 cal./kgm. will prevent ketosis and breakdown of tissue proteins.[6] However, body fats will be burned and weight loss will occur. These caloric requirements can be met by giving two liters of 5% D/W and one liter of 5% Amigen intravenously. Consequently, any protein given as blood, albumin, amigen or plasma will not be expended for energy. The third criterion is "Butler and Talbot's rule of basal protein maintenance," whereby 25 cal./kgm. will spare the breakdown of proteins and fats.[7] Under these conditions ketosis and weight loss do not occur and protein is used for tissue repair. The required calories can be obtained by giving three liters of 10% D/W and one liter of 5% Amigen solution. The fourth criterion is the "protein restitution rule of Lund," in which 30 to 40 cal./kgm. can correct any protein deficiency and cause the body to gain weight.[8] These caloric needs can be achieved with three liters of 15% D/W and one liter of 5% Amigen solution.

In order to simplify these rules, one need only remember: (1) "The protein sparer rule of Elman;" i.e., 100 grams of carbohydrate per day will prevent the breakdown of endogenous protein and (2) the protein restitution rule for sick patients: i.e., 2 to 4 gms. of

protein/kgm. will cause the body to rebuild its tissue proteins. These two rules together with Whipple's postulates form the basis of protein therapy. Arnold Kremen showed that any chronically ill and malnourished patient can be made ready for surgery by giving 500 cc's. of whole blood and 3000 cc's. of Amigen daily.[9]

Whenever there is a loss of one gm. of plasma protein from normal, 30 gms. of tissue protein are lost.[10] A patient taking or receiving no protein, looses 25 gms. of tissue protein daily. A total serum protein of 5 gms./100 cc. in a 70 kgm. patient indicates that there is a depletion of 2 gms./100 cc. of serum proteins. Since plasma comprises 5% of the body weight, a 70-kgm. patient would contain 3500 cc's. of plasma ($5 \times 70 = 3500$ cc's.). If there is a loss of 2 gms. of protein per 100 cc's. of plasma, then 3500 cc's. of plasma would have a loss of 70 gms. Since a loss of one gm. of plasma protein is equivalent to a loss of 30 gms. of tissue protein, 2100 gms. of tissue protein ($70 \times 30 = 2100$ gms.) are lost. Total loss of protein in the body is equal to plasma and tissue loss which would amount to $2100 + 70$, or 2170 gms. This loss of body protein must be replaced in addition to the daily protein requirements of the patient. A simple formula for the total loss of protein is: 5% x weight in kgms. x serum protein depletion x 30.

In nutritional repair of patients, Madden et al. found that intravenous protein hydrolysates are not as effective as oral protein.[11] Twice as much intravenous protein hydrolysate is required to maintain positive nitrogen balance when compared to the oral administration of protein.[12] The most effective way to give protein is by mouth and with whole protein foods and not by amino-acid mixtures.

As mentioned previously, hypovolemic patients are prone to shock and anesthetic complications. These patients have poor wound healing and an increased incidence of wound dehiscences.[13] They are more susceptible to the development of decubitus ulcers.[14] In addition they have delayed gastric emptying, decreased intestinal motility, and edema of bowel anastomoses with consequent dysfunction and leakage.[15] Because of decreased production of antibodies, they easily become infected. Likewise, they tolerate salt poorly because of retention of water in the tissues.

There are certain priorities in treatment of protein deficiencies. When protein is given to anemic patients it is first diverted into the production of hemoglobin. After hemoglobin has been restored to normal levels, protein is utilized to correct plasma protein deficits. When plasma proteins are restored to normal values, protein is used to rebuild tissues. To recapitulate this priority system, protein is first used to synthesize hemoglobin, then replace plasma proteins, and finally rebuild tissue proteins. Consequently, the preparation of a hypoproteinemic, anemic-malnourished patient consists of first correcting the electrolyte disorder and azotemia, then transfusing the patient to correct the anemia, and finally administering oral or I-V protein to replenish the depleted plasma and tissue proteins.

Antibiotics Cellulose is digested by coliform bacteria in the ileum, cecum and ascending colon. By this digestive process, vitamins K, B_{12}, biotin, niacin, thiamin and riboflavin are produced.[16] The amount of vitamins

synthesized varies with their intake. When the diet is adequate in vitamins, only small quantities are manufactured in the intestines. Also, the type of food affects their production. For example, a diet rich in fats decreased the production of riboflavin. Antibiotics and sulfa drugs taken orally to sterilize bowel for surgery, destroy these bacteria and consequently induce hypoprothrombinemia and other vitamin deficiencies. Therefore, not only must vitamin K be given but also vitamin B_1, B_2, niacin, and B_{12}.

A colon is best sterilized for surgery with antibiotics and non-absorbable sulfonamides. When antibiotics are used alone they often cause an outgrowth of resistant pyocyaneous and proteus organisms. Sulfa drugs, such as sulfathalidine and sulfasuxidine, destroy these organisms. Cohen, and Poth, advocate kantrex or neomycin combined with sulfathalidine as the best bowel preparation for surgery.[17,18] In summary, when bowel is being prepared for surgery an antibiotic-sulfa preparation is the agent of choice combined with Vitamin K and multiple vitamins.

Anemia Colonic diseases are often associated with various anemias. These anemias may be classified as those of (1) blood loss, (2) dietary deficiency and (3) infection.

The average patient with carcinoma of the colon has a blood volume deficit of 800-900 cc's. This hypovolemia is usually due to a combination of factors such as chronic blood loss, infection and poor nutrition.[19] To prepare such a patient for surgery, the blood volume and anemia must be corrected by giving two pints of blood, or one pint of blood and 500 cc's. of 5% D/W. In addition, antibiotics and vitamins should be administered to combat infection and rectify vitamin deficiencies.

In the synthesis of hemoglobin, vitamin C, niacin, pyridoxine and B_{12} play an important role.[20,21] Also, amino-acids such as tryptophane are necessary for the synthesis of hemoglobin. Diets deficient in these vitamins and proteins produce a nutritional type of anemia which is characterized by hypochromia and macrocytosis of red cells. Iron deficient anemias, on the other hand, are of the microcytic hypochromic variety. They may be due to faulty intake of iron, poor absorption or loss by bleeding. Elderly people with hypochlorhydria and poor dietary habits often suffer from iron deficiency anemia. The anemia of infection is usually a serious problem, and is characterized by hemolysis and storage of iron in tissues. During severe infections, blood must be transfused to correct the anemia and to supply antibiodies, and large doses of the appropriate antibiotics should be given to destroy the bacteria.

Resections of Colon If more than 30 cms. of ileum are resected in colonic operations, diarrhea usually ensues.[22] When the ileocecal valve is retained, diarrhea does not occur. Therefore, ascending colo-rectostomy or cecorectostomy are preferable to ileosigmoidostomy for cancer or ulcerative disease of the colon. Patients will have less than three stools per day with an adapted ileo-rectostomy, if less than 30 cms, of ileum were resected.

Small bowel when interposed between colonic segments assumes the function and appearance of colon within three to four weeks. Such interposition operations have been applied to bridge defects of colon which could not be approximated or mobilized because of ad-

hesions or other technical difficulties.[23]

Interposed segments of ascending colon and transverse colon have been used successfully to replace the esophagus or stomach.[24] In esophagectomy or total gastrectomy, such colonic segments loose their function of digestion of cellulose, bacterial synthesis of vitamins and absorption of water and electrolytes. They simply become motile propulsive conduits with little function.

Side-to-side anastomoses without continuity, such as the ileo-transverse colostomy or ileo-sigmoidostomy, may cause the development of a blind pouch either on the side of the colon or ileum. Such a blind pouch may produce a syndrome which is characterized by anastomotic dysfunction, mucosal ulceration with bleeding, and a macrocytic hypochromic anemia.[25,26] The pouch looks and behaves like an accessory cecum or piece of reduplicated bowel. Mechanical kinks cause fluid and gas in the pouch to produce dysfunction of the anastomosis. Mucosal ulceration and bleeding result from stasis, chronic irritation, and infection. Bacteria usually grow abundantly in this blind pouch. Most of the anemias associated with this blind pouch are of the hypochromic macrocytic variety which respond to vitamin B_{12}, folic acid and liver injections. However, the best cure is resection of the blind pouch with end-to-end anastomoses.

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Triparanol and the Coloproctologist

DONALD C. COLLINS, M.D., F.A.C.S., F.I.A.P.
Hollywood, California

American medicine has just witnessed a major break-through in the easy reduction of hypercholesterolemia. Coloproctologists may well ask what this discovery has to do with the successful practice of their specialty. The answer to this query will be unfolded in the following presentation.

The employment of triparanol, or its trade name MER-29® (Merrell), has completely revolutionized the present-day treatment of hypercholesterolemia. This new chemical substance was placed on experimental clinical trial about two years ago. The first public announcement of its being made available for general medical use was made in the *Medical Tribune*, July 4, 1960.

Prior to this time, many different types of treatment have been advocated for the reduction of both serum and tissue cholesterol levels in the human. Essential fatty acids are required to aid in the regulation of cholesterol levels in the blood and tissues.[2] Deprivation of essential fatty acids in the diet of rats resulted in profound recognizable body changes (especially to epithelial structures, resulting in scaliness), associated with concentration of cholesterol in both the liver and adrenal glands, a reduction of plasma cholesterol, and increased fat infiltration in the liver.[3] This was proven by Hansen[26] as clinical similar behavior occurred in human infants that was quickly corrected by adding two percent of calories as linolenic acid to the diet.

Earlier investigators[55, 57] believed that the emptying time of the stomach was dependent upon the melting point and the viscosity of the fats ingested. These statements were refuted[27] in 1943, when no such relationship could be demonstrated by experimental methods. This was further affirmed by Pinsky.[47] However, in 1949, Cheng et al.[15] demonstrated an inverse relationship between the melting point and absorption in the rat.

Bloomstrand[10] and Fernandes,[23] working independently of each other, showed that C^8 fatty acids were *not* transported by the lymphatic pathways in man. Bollman[11] stated that most of the products of fat digestion appear in the lymph.

Schonheimer et al[50] found in individuals having hepatic disease that they had large amounts of cholic—and desoxycholic — acids in their bile, instead of normally conjugated forms with glycine or taurine. Colp and Doubilet[16] said that this conjugated form normally occurred to the extent of eighty percent. Swell et al[54] recorded that bile is required in the normal absorption of cholesterol. They concluded that dietary fats appear to have several effects on cholesterol absorption, namely:—stimulation of bile flow, provision of fatty acids for esterification, and possibly other presently unknown influences. Magee et al[38] found that a reduced secretion of cholate was indicative of hepatic dysfunction, and that a definite correlation exists between the mean deficit and the BSP (bromsulfphthalein) retention.

Chaikoff and his group[8, 9, 13, 14, 34] found that regardless of the form in which fats are fed, the longer carbon chain fatty acids appear chiefly in the lymph, while the fatty acids with less than twelve carbon atoms appeared in the portal vein. Cholesterol is transported entirely by the lymphatics and *none* through the portal system.

Enos[21, 22] reported that 77.3 percent of three hundred American soldiers, killed in action in Korea, with an average age of 22.1 years, had some gross and confirmatory miscroscopic evidence of coronary disease and atherosclerosis at even that early age.

In 1959, Kinsell[33] stated that for many years, the elimination of cholesterol from the diet had a considerable vogue. When it became apparent, however, that endogenous cholesterol formation was a much more important factor (three times as great) than exogenous intake, this dietary approach to the problem fell into deserved disrepute. It is unsound to "lump" dietary fats with respect to their effects on plasma cholesterol. Vegetable fats rich in linoleic acid lower plasma cholesterol and animal fats, which contain predominantly saturated and monounsaturated fatty acids, have a significant elevating effect on plasma cholesterol. This was also confirmed by Rustein et al.[49] Kinsell[32] recorded a three-year study in which the continuous intake of unsaturated fatty acids had greatly relieved the symptomatology on individuals with atherosclerosis associated with peripheral vascular disease and its resultant intermittent claudication.

In 1953, Walker et al[58] recorded that an average weight loss of nineteen pounds in a series of thirty-nine subjects, placed on a low-fat and a low-cholesterol diet, was also accompanied by a significant reduction in the level of the total serum cholesterol in twenty-one (54.4 percent) instances. Significant cholesterol reductions tended to occur most frequently when hypercholesterolemia

had initially been present. Six years later, Montoye et al[41] confirmed the opinions of Walker and his coworkers. Merrill[40] demonstrated that reduction of weight is sometimes accompanied by a reduction in the level of serum cholesterol, particularly, if it is initially elevated.

According to Katz and Stamler,[30] persons today with familial histories of myocardial infarction, coronary atherosclerosis, or hypertensive cardiovascular —or cerebrovascular disease are now often treated preventively with the aim of correcting blood cholesterol or lipoprotein abnormalities, or both; in the hope that propyhylactic measures will reduce, postpone, or avoid statistically likely coronary or cerebral thromboses of atherosclerotic origin.

Brown and Page[12] were able to lower blood lipid levels to approximately normal in hypercholesterolemia subjects by either a low-fat and low-cholesterol diet or by the vegetable oil dietary pattern advocated by these two authors. In some, the latter type of diet effected steadier and lower cholesterol levels. Beveridge et al[5] stated that in man the serum cholesterol level is highly responsive to the concentration of dietary cholesterol. In man, there can no longer be any doubt of the responsiveness of man to dietary cholesterol, although the nature of the accompanying fat or oil affects to a large extent the response obtained.

Weiss[59] recently recorded that in hens, the feeding of high, nontoxic doses on nicarbazin, a drug used to control coccidioidomycosis, caused the reabsorption of unlaid eggs, with a resultant high blood cholesterol; as high as 600 to 900 mgms. per 100 ml., for as long as the study was continued; i.e.,—up to thirty-two weeks.

Curran et al[18] concluded after experiments on rabbits that lipid in the blood stream of animals fed a high-cholesterol diet, infiltrates arterial lesions created by the formation of thrombi. Schwenk and Stevens[52] studied the relationship of the deposited cholesterol in atherosclerotic plaques to that of the general metabolic pool. Of nine-hundred mgms. per day fed to each animal, only 0.03 mg. per day, per gram of wet tissue weight, was deposited in the atheromatous aortas. Deposited cholesterol in the aortic plaques and in all other tissues was replaced daily by new cholesterol subsequently fed. There is a continuous exchange between the blood and all of the body tissues. Starr et al[53] very recently recorded that sodium dextrothyroxine in forty-three outpatients, given daily in oral doses from two to sixteen mgms. for a period of six to twelve months, effectively seemed to reduce the serum cholesterol level, equally well in patients with either diabetes mellitus, hypothyroidism, or idiopathic hypercholesterolemia.

Parsons[46] stated that large doses of nicotinic acid reduced serum cholesterol in the majority of eighty hypercholesterolemic patients, for up to four years. However, untoward reactions are fairly common. Upper gastrointestinal tract irritation can be largely eliminated by the use of buffered tablets. Temporarily impaired glucose tolerance and hepatic function rapidly returned to normal, when the nicotinic acid was discontinued.

Corday[17] treated forty-nine patients, with 100 mgms. of tetraiodothyroformic acid and iodopropionic acid, who had marked coronary arteriosclerosis and hypometabolism induced by radioactive iodine, in order to relieve them of angina

pectoris. All were hypothyroid. These patients were followed for at least nine months and no dietary restrictions were imposed. After such treatment, the average blood cholesterol level was 143 mgms. percent, as against an average control level of 372 mg. percent. The two thyroid analogues caused no appreciable increase in metabolic rate.

Eggstein and Schettler[20] said that when decreases in serum neutral fatty acid and triglyceride levels are evaluated in response to the low-fat diet in arteriosclerotic patients uncomplicated by advanced hypertension or a rice diet, they found in short-term studies that the neutral fat and triglyceride levels fall in proportion to the drop in cholesterol and total lipid levels. The biochemical problems of essential fatty acids were recently well summarized in book form.[24] Groen[25] very recently recorded that European Monastic, country living Benedictine and Trappist monks were unusually free of coronary artery disease, because of their low cholesterol diets and freedom from stress in their daily lives.

Quite recently, Thomas, Wharton and Osmon[56] presented an excellent, up to date study on recent aspects of fat metabolism. They concluded in part, that: there is no valid reason today or experimental evidence to substantiate the condemnation of certain dietary fats on the basis of their origin or their saturation. Fat absorption was *not* correlated with melting point or viscosity. Their studies seemed to indicate that certain fats stimulate the fat-digesting and fat-absorbing mechanisms more than others. The exact mechanism is not well understood at present. Davis[19] warned that since the major part of fat absorption in dogs, and confirmed in rats, occurs in the distal-third of the ileum, it is probably most unwise to resect that region of the human gastrointestinal tract, unless it is unavoidably necessary.

Morrison[42] presented very recently an outstandingly excellent report on the role diet plays in coronary atherosclerosis. He concluded in part as follows: "a series of 100 patients with primary coronary thrombosis and mycardial infarction was observed for 12 years. Two groups of 50 patients each were studied to evaluate the results of treatment by a low-cholesterol, low-fat diet. In the control group of 50 patients who did not follow any dietary program, all patients had died by the twelfth year. In the group of 50 patients treated by the 25 gm. low-fat diet, the survival rate at the 12th year was 38%. More extensive studies of the therapeutic value of nutritional methods in the treatment of human arteriosclerosis are necessary."

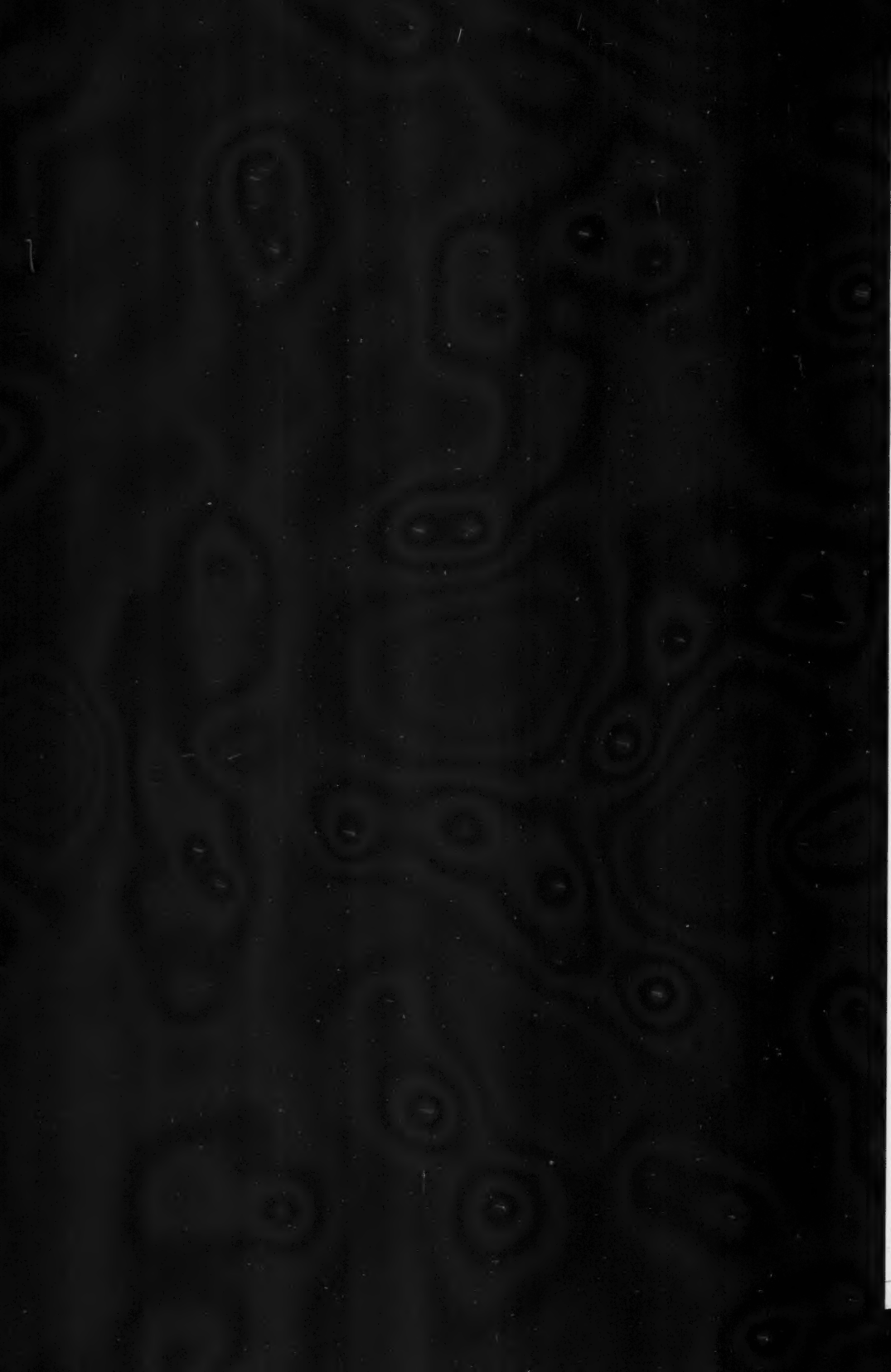
Other well known factors that influence serum cholesterol levels are:

(1) Racial studies, where low cholesterol levels are due to dietary restrictions, are associated with a low incidence of coronary artery disease.

(2) Stress increases serum cholesterol levels and is associated with higher incidence of coronary artery disease.

(3) Menstruating women have low levels of cholesterol and an associated low incidence of atherosclerosis. In postmenopausal women, there is increased incidence of hypercholesterolemia and coronary artery disease. The prime factor is the inhibiting effect of estrogen on serum cholesterol levels.

(4) Animal studies in which high fat and high cholesterol diets are associated with a higher incidence of atherosclerosis are well documented at postmortem.



Unsaturated fatty acids, as corn oil containing high percentages of linoleic acid, prevents absorption of cholesterol from the gastrointestinal tract. Estrogen and thyroxine analogues increase excretion and catabolism of cholesterol. Nicotinic acid in large doses (one to three gm. daily) will lower blood cholesterol by an unknown mechanism.

The objections to the above methods of therapy are briefly as follows: Large amounts of expensive and unpalatable corn oil are required daily in that diet. The patient will finally rebel against this diet. Estrogens cause, in the male, loss of libido and secondary sex characteristics. Thyroxine analogues commonly cause tachycardia. Effective doses of nicotinic acid cause skin flushing and unbearable gastrointestinal upsets. Thus, it was obvious that some new drug, without these objectionable features, was urgently needed to successfully treat hypercholesterolemia and its undesirable sequellae.

Experimental supplies of MER-29 became available about two years ago. A tremendous amount of research and clinical testing has been done on this drug in the intervening period of time.

In 1959, Blohm et al[6] learned that in rats with bile fistulas, MER-29 reduced the outflow of cholesterol in the bile. This effect is consistent with decreased production of cholesterol by the liver. MacKenzie and Blohm[36] concluded that MER-29 inhibits the biosynthesis of cholesterol in the liver and intestine of the intact rat. This inhibition probably occurs at a stage following the formation of the 3-beta-hydroxysteroid nucleus and does *not* involve activation or oxidative metabolism of acetate. Oaks and Lisan[43] summarized their studies by saying that the data obtained reveals that in most cases the serum cholesterol was lowered in the dosage range of 100 to 150 mgms./day.

Hollander et al[28] tabulated his studies as follows: "MER-29 is an effective agent in reducing both serum cholesterol and the 'miscible pool' of cholesterol in man. MER-29 caused striking improvement in exercise tolerance as well as in electrocardiographic abnormalities during exercise in 3 of 9 subjects who received it from 2-4 months. These findings suggest that MER-29 may improve the adequacy of coronary circulation. Although longer observation in a larger group of patients with more detailed toxicity tests are necessary to establish fully the use and safety of MER-29 in coronary artery disease."

Oaks et al[44] concluded: "This drug which inhibits cholesterol synthesis was administered to 36 patients. By virtue of its enzymatic inhibiting action on liver synthesis of cholesterol, the drug produced a statistically significant depression in serum cholesterol concentration. The drug was well tolerated in dosage levels used and was relatively free from toxic side effects. It is concluded that MER-29 is an effective drug for lowering serum cholesterol and warrants further investigation."

Blohm et al[7] remarked that in monkeys the oral administration of MER-29 over a six-month period of time produced the following results: a. A reduction of plasma total and alpha-and beta-lipoprotein cholesterol. b. No effect on plasma phospholipids, or alpha-and beta-lipoproteins stainable with oil red 0. c. A lowering of erythrocyte cholesterol. d. A reduction of plasma unsaponifiable matter; this was reduced less than plasma cholesterol, because of accumulation of other unsaponifiable

material which in one monkey amounted to 40% of the drop in cholesterol.

In 1960, Avigan et al[4] concluded that MER-29 strongly inhibits cholesterol biosynthesis and depresses serum and liver cholesterol levels. Kariya and Blohm[29] recorded that over a ten-day period, the triparanol rats excreted a greater fraction of administered radioactivity in these forms than controls. This was attributed to reduction of the pool of labeled sterols and other intermediates by triparanol plus the fact that the end products of the sterol-synthetic pathway in triparanol treated rats are excreted as unsaponifiable matter and acidic products, probably bile acids.

King and Smith[31] conducted toxicological and pathological studies on triparanol: M.L.D. for the mouse was 1600 plus or minus 132 mg./Kg., and for the rat in excess of 2000 mg./Kg. The adrenals of *all* species showed partial lipoid depletion in the cells of the zona fasciculata (spongiocytes). However, no changes were seen in the overall architecture of the adrenals.

MacKenzie and Blohm[37] studied the distribution and excretion of radioactive triparanol in the albino rat. Their data indicated that this drug is mainly excreted in the feces via the bile; but most of it has been chemically modified before excretion. Very little remains in the main organs two days after ingestion. Schroepfer[51] believed that in the MER-29-treated rats, there occurred an accumulation in the liver of a sterol other than cholesterol. This sterol was identified as being desmosterol by Avigan and Steinberg (Unpublished data). These findings are compatible with a block in the reduction of the 24-, 25-double bond by MER-29.

Oaks et al[45] decided that: A daily single dose of 250 mgms. was sufficient to lower the blood cholesterol significantly in eighty-three percent of patients (33 out of 36) with baseline levels of 250 mg. percent and higher. The maximum fall in cholesterol usually occurred in the fourth week and was maintained for over ten months (duration of study to date). Forty-five of subjects had an actual average fall of 55 mg. percent in blood cholesterol, so long as the patient stayed on this drug. In two patients on discontinuing the drug, the serum cholesterol again rose to pretreatment levels. Upon reinstitution of therapy, a significant lowering of serum cholesterol was again seen. Toxic studies revealed *no* hepatic or hematologic effects. In the 250 mg. range, there was no nausea or vomiting. With higher dosages, thirteen percent had both nausea and/or vomiting. False positive urinary albumen tests may be obtained from some unknown metabolic breakdown product of this drug excreted in the urine. One patient had a temporary erythematous dermatitis that subsided with discontinuance of MER-29.

The endogenous biosynthesis of cholesterol is thought by most investigators to proceed in the following steps: Acetyl Co A condenses to form Aceto-Acetyl Co A which with the addition of one more Acetyl Co A and a decarboxylation produces dimethylacrylate, which is a 5 carbon unit. There follows a condensation of six of these units through various steps to form the long chain hydrocarbon squalene. The squalene cyclizes and forms cholesterol by losing three methyl-groups.

Thirty-three percent of cholesterol is in free state and the remainder is esterified. Red cells, nerves and brain contain the only free cholesterol, while

other tissues possess both free—and esterified—forms. The total lipid partition is broken down into: (1) Cholesterol, thirty-seven percent. (2) Phospholipids. (3) Triglycerides. (4) Free fatty acids.

Lipids involved in atherosclerotic plaques reveal that the origin of the lipids is chiefly from the plasma. Fifty percent or more of the plaque is in the form of usually esterified cholesterol. Further evidence of association of hypercholesterolemia and atherosclerosis is derived from diseases with high serum cholesterol levels that show a much higher incidence of atherosclerosis, especially in diabetes mellitus, hypothyroidism, essential hyperlipemia, and nephrosis.

Recently, Ahrens[1] made it a well documented fact that *fat* and not cholesterol in the diet was responsible for high levels of serum cholesterol lipid and lipoproteins that may very well be cardinal signs of metabolic abnormality. Sudden elevation of these serum constituents, especially serum cholesterol, may be associated with incipient coronary artery disease. The correlation of high serum cholesterol with atherosclerosis is statistically well documented.

Lisan et al[35] very recently remarked that in an eight-month study, eighty-seven percent of forty-five patients showed significant depression of serum cholesterol on a daily dosage of from 250 to 1,000 mg. of triparanol. There was little or no toxic clinical or hematologic effects. Twelve of sixteen patients with angina pectoris had definite improvement and the recurrence rate of myocardial infarction and mortality was reduced.

The Wm. S. Merrell Company,[39] in a double-page spread, announced MER-29® (triparanol) to the general medical profession in the July 4, 1960 issue of the *Medical Tribune*. In this announcement, it is stated among other things that: (1) Cholesterol produced within the human body by biosynthesis is about three times as great in amount as that obtained from the diet. (2) Before MER-29, no practical method of modifying total body cholesterol production was known. (3) MER-29 is well tolerated. In the recent analysis of 576 individual case reports, 165 had been treated with MER-29 for continuous periods in excess of a year. A number had received two to four times the daily recommended dose for as long as fourteen months. Side effects were seldom seen, and the incidence of these reported (nausea, dermatitis), usually was correlated with dosages greater than that now recommended. In no case has there been clinical indication of toxic effects on the function of any vital organ or system. (4) MER-29 is *not* to be considered a substitute for measures ordinarily employed to control hypertension, obesity, anxiety, and other conditions associated with cardiovascular disorders. It is contraindicated during pregnancy, because cholesterol plays a most important role in the development of the fetus.

This résumé brings the reader up to date in regards to the general problem of hypercholesterolemia and atherosclerosis and attempts to reduce it by various modes of therapy. A brief review of the more important facts about MER-29 or triparanol have been included. Thus, it is now obvious why this drug will be of great value to the coloproctologist in the future to guard against the development of the dreaded

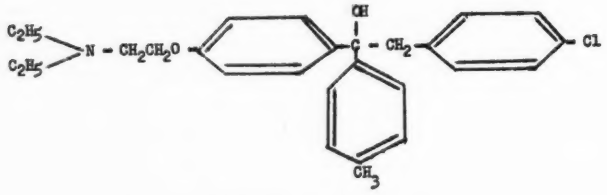


FIGURE I THE CHEMICAL STRUCTURAL FORMULA OF TRIPARANOL (MER-29®)

[p-(β-diethylaminoethoxy)-phenyl]-1-(p-tolyl)-2-(p-chlorophenyl) ethanol

TABLE I AVERAGE REACTION OF HYPERCHOLESTEROLEMIC PATIENT TREATED WITH TRIPARANOL

TIME IN WEEKS:	CHOLESTEROL MGS./PERCENT:
Before Treatment Started	360
1	310
2	275
3	250
4	230
5	215
6	200
7	190
8	180
9	178
10	176
11	175
12	178
51	177
52	180

TABLE II TOTAL LOSS OF CHOLESTEROL IN MGMS. PERCENT AS COMPARED TO LEVEL PRIOR TO TREATMENT BEFORE INSTITUTION OF 500 MGMS. OF TRIPARANOL DAILY IN SEVENTY-FIVE PATIENTS, EIGHT WEEKS OF CONTINUOUS DAILY TRIPARANOL THERAPY

LOSS OR GAIN IN CHOLESTEROL, IN MGMS. PERCENT AS COMPARED TO VALUE BEFORE TREATMENT:	NUMBER OF PATIENTS:	PERCENT OF 75:
Minus 250	2	2.6666
Minus 200	3	3.9999
Minus 150	7	9.3331
Minus 100	35	46.6655
Minus 50	20	26.6660
ZERO (Failure)	4	5.3332
Plus 50 (Failure)	3	3.9999
Plus 100 (Failure)	1	1.3333
Plus 150	0	0.0000
TOTALS:— Minus 250 - to Plus 100	75	Percent 99.9975

postoperative cardiovascular complications that can cause the death of your patient with dramatic and frightening suddenness. With the advent of triparanol, a serum cholesterol determination should be made upon your patients. Those with a level over 250 mg. percent should be treated by one of two 250 mg. capsules per os daily, until a subsequent serum cholesterol determination reveals that a normal level has been acquired. Under this type of management, elective coloproctologic precedures can be performed with the certainty that you are affording your older patients with a maximum of protection from developing a postoperative dangerous cardiovascular complication—based upon hypercholesterolemia and resultant atherosclerosis.

Surely, this is of major importance to all coloproctologists.

My personal experiences with triparanol have been limited to only the past year and seventy-five patients that have remained on continuous therapy and been checked at monthly intervals after their maximum improvement has been obtained in the reduction of the serum cholesterol level to nearly normal figures (less than 250 mg. percent). The dose of triparanol that I have prescribed has been one 250 mg. capsule by mouth, twice daily. This therapy has been continuous in these seventy-five patients. Seven other patients began their treatment, but failed to return for followup care and supervision. They are not counted in these tables. There have been no toxic reactions. There have been no deaths.

Figure I depicts the structural chemical formula of triparanol and its specific chemical name.

Table I gives the average clinical picture of a patient before therapy and after one year's treatment with triparanol in reference to serum cholesterol levels.

Table II tabulates the reduction of the total cholesterol level after one month's therapy with 500 mgms. of triparanol daily. Eight patients (10.67 percent) did not obtain a satisfactory reduction of their pretreatment cholesterol levels. They are being studied intensively in an effort to learn the reasons for this failure.

Conclusions

1. A major medical break-through has just occurred with the advent of a new drug, called triparanol, which promises to greatly reduce in the future cardiovascular diseases resulting from cholesterolemia and its resultant atherosclerosis. This is indeed of major importance to all physicians and especially to coloproctologists.

2. Triparanol has the unusual ability to stop the endogenous biosynthesis of cholesterol in the liver, thereby preventing the formation of at least seventy-five percent of all cholesterol in the human.

3. Triparanol is a safe drug, as far as can be determined after only one year's experience with it in seventy-five patients. Further clinical testing must of necessity be done on a far larger scale to correctly evaluate its usefulness.

4. At present, triparanol possesses apparently great value as a safe means of reliably lowering hypercholesterolemia to relative normal levels,

thereby greatly diminishing the incidence of resultant atherosclerosis, coronary artery disease, cerebrovascular—and arterial—accidents, emboli, and phlebothromboses—all a great threat to the coloproctologist treating our older patients, postoperatively.

5. Triparanol works quickly to reduce total cholesterol values to those approaching normal within usually four weeks' medication.

6. There were no complications and no deaths in any triparanol-treated patient.

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7046 Hollywood Boulevard

ACUTE HEMORRHAGIC NECROSIS OF THE GASTROINTESTINAL TRACT

Eleven cases of extensive hemorrhagic necrosis of the gastrointestinal tract are presented. All patients had a prolonged illness before the onset of the bowel disturbance; 8 had chronic congestive heart failure, 1 hypertension and cardiac arrhythmia, without heart failure, 1 gangrene of a leg, and the other acute peritonitis secondary to cholecystitis. All died in shock. Six had clinical evidence of gastrointestinal bleeding, which was massive in 2. The abdominal symptoms and signs were comparatively meager.

The pathology is distinct, consisting first of severe congestion and later of edema, extensive hemorrhage and superficial necrosis, involving chiefly the mucosa and submucosa and leading to massive intraluminal hemorrhage. Inflammation is usually mild or absent. The lesion can be either patchy or diffuse and often involves the entire gastrointestinal tract.

The etiology is unknown, and various contributory factors, including the role of shock, in the genesis of this lesion are discussed.

This condition should be seriously considered in elderly, chronically ill patients who present vague abdominal complaints, sudden shock and gastrointestinal bleeding.

Si-Chung Ming, M.D., Ruven Levitan, M.D.

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A CLINICAL EVALUATION

Surgical and Non-Surgical Uses of a Rectal Suppository

CARLTON D. FORD, M.D.
AARON PRIGOT, M.D.
New York, New York

During the last decade, many of the drugs used to control pain and discomfort associated with anorectal disorders have been combined with a corticosteroid. Combining these medications, the majority of which are either astringents, analgesics, anesthetics, or protective agents, has been entirely justified, since it has provided a more effective means of relieving edema and inflammation during the acute phase of treatment.

Despite intense research on the corticosteroids, the mechanisms of action by which these drugs influence edema and inflammation are not fully understood. One of the most appealing theories postulates that cellular injury *per se* is only one of a series of events leading to an inflammatory response, and that the corticosteroids produce their effects by inhibiting or altering one or more of these events, including the formation of mesenchymal cells, the secretion of histomine, and the structure of fibroblasts. Perhaps as suggested by the work of Dougherty and Schneebeli,[1] the most important effect of the steroids involves the alteration of fibroblastic structure. These investigators have shown that, as topically administered hydrocortisone becomes concentrated with the cytoplasm of fibroblasts, the cell tends to "round up," increasing its cytoplasmic basophilia and becoming more epitheloid in appearance, and that the end result is an increased resistance to fibroblastolysis.

This report presents findings accumulated during the evaluation of a rectal suppository containing a clinically proven combination of drugs,* to which hydrocortisone acetate was added. In addition to using this preparation in the customary manner, it was also employed as an adjunct to surgery in a way that, at least to our knowledge, has not been previously reported.

Material and Method A total of 102 patients, ranging in age from six to eighty years, were treated during this study. The majority of patients were from the proctology clinic of a large

* Anusol and Anusol-HC, Warner-Chilcott Laboratories, Morris Plains, New Jersey.

metropolitan hospital, while others were from the private practices of the investigators. Twenty-seven patients failed to report for post-treatment examinations or were not included in the final evaluation, because of infrequent clinic attendance. This report therefore, details our observations on the treatment of seventy-five patients with a variety of anorectal disorders. Diagnoses were established by sigmoidoscopy and/or anoscopy either before treatment was initiated or during treatment, if the proctologic examination was considered too painful to be carried out when the patient was first seen. In patients with rectal bleeding, barium x-ray examinations were done to determine whether lesions of the colon existed. Frei tests for lymphogranuloma venereum were performed on all patients with proctitis and benign rectal strictures.

The medication under study was a rectal suppository consisting of a cacao butter base with bismuth subgallate, bismuth resorcin compound, Nicaraguan balsam, zinc oxide, boric acid and 10 mg. of hydrocortisone acetate. It was used to control (or prevent) edema and inflammation associated with three distinctly different clinical situations: (a) as symptomatic therapy in outpatients not requiring surgery, or in cases where definitive surgery was preferably postponed, until the inflammatory processes were reduced; (b) immediately following the removal of Vaseline® packing in patients recovering from hemorrhoidectomies; (c) as part of the final phase of surgery in patients undergoing hemorrhoidectomies. When used in this fashion to retard the development of postoperative edema and inflammation, the suppository was inserted during the final phase of surgery in place of the usual Vaseline gauze packing. When necessary, a suppository containing all the above ingredients except the steroid was employed once the acute inflammatory reaction had been controlled.

Because the preparation was used in different clinical situations with the expectation of different types of results, response to treatment was determined on an individual basis. Objective improvement observed during the patients' final proctologic examination served as a basis for judging results. To avoid errors inherent in trying to determine degrees of improvement, we scored results as either "satisfactory" or "unsatisfactory." Final results represented the collective judgment of the investigating team.

Results of Non-Surgical Cases

Results are presented for only those patients who returned frequently during treatment and for a final proctologic examination to permit adequate evaluation of clinical response. The diagnoses for this group of fifty patients are listed in Table I, with an evaluation of the therapeutic response. This was considered satisfactory in forty-seven patients (ninety-four percent) and unsatisfactory in three (six percent). The topical medication was well-tolerated. No side effects of any type were reported and no allergic manifestations were observed. Results for each of the diagnostic categories are summarized below. Representative case histories are presented for each of the two

From the Department of Surgery of Harlem Hospital, Department of Hospitals, New York, New York.

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TABLE I DIAGNOSES IN PATIENTS TREATED NON-SURGICALLY WITH SUPPOSITORIES

DIAGNOSIS	NUMBER TREATED	RESULTS Satisfactory	Unsatisfactory
Internal and/or External Hemorrhoids	15	15	0
Proctitis	15	15	0
Cryptitis	3	3	0
Pruritus Ani	8	5	3
Papillitis	1	1	0
Anal Fissure	3	3	0
Anal Fistula	2	2	0
Lymphogranuloma Venereum*	3	3	0
Total and Percent	50	47(94%)	3(6%)

* All patients had benign rectal strictures.

largest categories, i.e., internal and/or external hemorrhoids, with or without bleeding, and proctitis.

In fifteen patients, internal and/or external hemorrhoids dominated the clinical picture. In addition to bleeding in the majority of this group, pretreatment signs and symptoms consisted of thrombosis, edema, inflammation, severe pain, intense pruritus and tenesmus. After an average of seven to ten days of treatment, all patients showed significant improvement. The majority were discharged after an additional week of therapy. None of these patients required surgical intervention.

CASE No. 1—A fifty-three-year-old man was seen because of severe rectal pain, tenesmus and bleeding. A rectal examination, although extremely painful, was performed and revealed the presence of internal thrombotic hemorrhoids. Sigmoidoscopy at this time was impossible. The patient was instructed to use the steroid-containing suppository twice daily for one week and to return for re-examination. At the second visit, the patient reported far less pain and that bleeding had subsided after three days of treatment. The reduction in edema and inflammation in the preceding week now permitted a sigmoidoscopic examination, that showed internal thrombosed hemorrhoids in the process of subsiding. Barium x-ray studies done at this time revealed no pathology of the colon. The patient was instructed to continue use of the suppository for seven additional days. The response at the end of this time was characterized by minimal absorbing hemorrhoidal disease and subsiding proctitis. The patient was discharged from treatment.

Chronic proctitis, cryptitis and papillitis were found in nineteen patients. Symptoms in these patients included rectal discomfort, pain, and tenesmus. Anoscopy usually revealed thickening of the mucosa, inflammation and edema of the crypts of Morgagni, narrowing of the rectal lumen and a glairy mucous exudate. Bacteriological studies and Frei tests were negative in all the patients. Within a week of initiation of treatment, these patients reported marked improvement with respect to subjective symptoms, which was confirmed in objective findings on examination.

CASE No. 2—A forty-year-old woman, who complained of severe rectal pain and tenesmus, was seen following an attack of diarrhea. This patient had undergone an ileotransverse colostomy for regional ileitis in 1947. Following

the operation she did well, except for an occasional bout of diarrhea, lasting two or three days, with eight to ten liquid stools daily. The bout of diarrhea experienced prior to this visit was more severe, with more frequent bowel movements over a more prolonged period of time. As this attack continued, she developed severe rectal pain and tenesmus. Proctoscopy performed during her first visit revealed proctitis and a fissure at the posterior commissure. The patient obtained considerable symptomatic relief from the suppository and by the fifth day of treatment was completely asymptomatic. Anoscopy performed at this time showed rectal mucosa of normal color, slightly granular in appearance, with a tendency to bleeding when traumatized. The anal fissure was no longer present and the patient was discharged from treatment.

Intense pruritus was the only pretreatment complaint in eight patients. It was associated with internal hemorrhoids in five patients. No causative agent could be demonstrated in the other three cases. All patients with pruritis associated with hemorrhoids obtained a satisfactory clinical response, while those with non-specific pruritus derived no benefit from the medication.

Two of three patients with anal fissures were children, both of whom developed the fissure after a prolonged period of diarrhea. Bacteriological studies failed to establish a specific etiologic agent. Treatment with the suppository once or twice daily for one week produced marked improvement in both juvenile patients. The remaining adult patient obtained a similar response after two weeks' therapy.

In several patients with pathologies characterized by severe inflammation and anal fistulas or stricture, the use of the suppositories produced local improvement which permitted operation under more favorable circumstances than when the patient was first examined.

Two patients with infected anal fistulas responded within seven days to combined treatment with the suppository and an antibiotic. After definitive surgery, recovery was uncomplicated.

Three patients with benign rectal strictures due to lymphogranuloma venereum were able to pass pencil-like stools, indicating that complete occlusion had not taken place. Radiographic studies demonstrated that the strictures were diaphragmatic rather than tubular. Combined therapy with the suppository and a broad-spectrum antibiotic produced, within five days, improvement that was characterized by varying degrees of increase in the lumen of the rectal canal and regression of inflammation, pain and tenesmus. The suppository was of distinct value in facilitating rectal dilatation in the patient who refused operation, as well as in the two who eventually had surgical excision of cicatricial tissues.

Results of Surgical Patients

In fifteen patients recovering from hemorrhoidectomies, the steroid-containing suppository was inserted when the Vaseline® packing was removed from the rectum, approximately twenty-four hours after surgery. As is usual at this phase, considerable edema of the rectal mucosa and rectal tags had developed. Postoperative treatment consisting of two suppositories daily and hot Sitz baths produced prompt amelioration in all patients. Many were asymptomatic by the fourth postoperative day.

It was the opinion of the investigating team that the majority of these pa-

tients experienced a smoother postoperative course than patients undergoing similar surgical procedures who were not given the topical medication. Wound repair progressed much more rapidly, edema and inflammation were adequately controlled and heavy scar tissue was kept to a minimum. Patients rarely mentioned the sensation of "increased rectal pressure," probably the most common complaint following anorectal surgery. Postoperative "soreness" usually subsided more quickly, allowing the patients to return to work, on the average, a week or so earlier than normally would have been expected after anorectal surgery.

The following case reports, illustrated photographically, reflect the satisfactory response which prevailed in surgical patients.

CASE No. 3—A thirty-six-year-old male entered the hospital because of thrombosed external hemorrhoids and prolapse and bleeding of internal hemorrhoids of two years' duration, as shown in Fig. 1.

On May 1, 1960, a hemorrhoidectomy was performed and a Vaseline® gauze pack inserted in the rectal canal. When the packing was removed on the following day, treatment with the suppositories was instituted. There was minimal postoperative edema in the subsequent days and the patient reported minimal discomfort.

At the time of discharge on June 1, 1960, the patient was comfortable, with no rectal pain or tenesmus on defecation. Figure 2 illustrates the regression of edema at this stage.

CASE No. 4—On January 11, 1960, a twenty-nine-year-old woman was hospitalized because of bleeding hemorrhoids and moderate pruritus ani of six

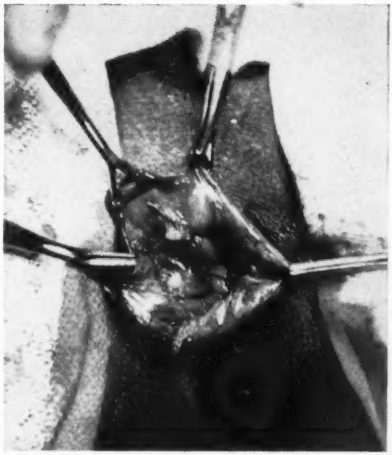

Fig. 1—5/1/60—Preoperative condition—thrombosed external hemorrhoids and prolapse and bleeding of internal hemorrhoids.

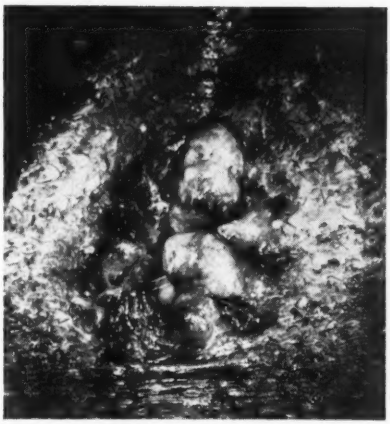

Fig. 2—6/1/60—Regression of edema following postoperative use of a hydrocortisone suppository.

Fig. 3—1/20/60—Edema 24 hours after hemorrhoidectomy.

Fig. 5—2/9/60—Healing progress 2 weeks after discharge from hospital.

Fig. 4—1/27/60—Regression of edema following postoperative use of a hydrocortisone suppository.

months' duration. Physical examination confirmed the diagnosis of combined internal and external hemorrhoids and revealed a secondary anemia due to chronic blood loss.

On January 19, the patient was subjected to hemorrhoidectomy and postoperatively the suppository containing corticosteroids was employed in conjunction with Sitz baths.

The progress of this patient is shown by Figure 3, postoperative edema on January 20; Figure 4, regression of edema on January 27; and the postoperative site on February 9, Figure 5, two weeks following discharge from the hospital. At this time the patient was asymptomatic and the pruritus had disappeared.

As part of this investigation, we altered the usual procedure at the conclusion of hemorrhoidectomies in ten patients. Instead of packing the rectum with Vaseline gauze as the final

phase of the operation, a suppository was inserted in the anal canal. This proved to be an excellent measure for minimizing postoperative edema and discomfort. Healing was not retarded and in some patients it appeared to be accelerated by this procedure. Although mucosal edema was observed in all cases, it was definitely less severe than was manifest in those patients in whom the use of the suppository was withheld until the Vaseline packing was removed twenty-four or more hours after surgery.

The postoperative course of all patients, who received the suppository, either immediately or after an interval of twenty-four hours, was significantly better than the recuperative period in patients without benefit of corticosteroid therapy.

Comment The multiplicity and variability of factors associated with anorectal pathology make the evaluation of morbidity extremely difficult. Pain, tenesmus, edema, inflammation, pruritus and bleeding are symptoms which may coexist, and their amelioration can be gauged only partially on an objective basis. The subjective reports of the patient constitute a factor which may favor or oppose the apparent therapeutic response. Despite these drawbacks, the results of this investigation of the steroid-containing suppository indicate that the preparation is most effective in controlling acute inflammation of the anorectal region and that it can be used in the management of outpatients and postoperative patients with a high degree of success. When employed after surgery, it frequently reduces morbidity, allowing the patient to return to normal activity more quickly. Its freedom from side effects is a distinct advantage, minimizing iatrogenic symptoms or discomfort. Moreover, because its active ingredients are neither analgesic nor anesthetic in nature, it does not mask serious rectal pathology should it exist.

Although it is well known that corticosteroids delay epithelialization when administered parenterally, or orally in sufficient dosages to produce demonstrable increases in steroid blood levels, it has been reported[2, 3, 4] that topical or rectal administration of these drugs does not impair, but facilitates wound healing. Since this observation was confirmed when we used the suppositories in patients recovering from hemorrhoidectomies, we decided to utilize them even earlier in the postoperative course, in place of the usual Vaseline gauze packing that is inserted during the final phase of surgery. The results obtained with this technique in a limited number of patients were so encouraging that we feel further study is warranted to determine its applicability to all hemorrhoidectomies.

Summary

A rectal suppository containing a combination of clinically proven medications and hydrocortisone acetate was used in a series of fifty patients with anorectal disorders not requiring surgery, or where definitive surgery could be postponed until after the acute phase subsided. Except for three patients with pruritus ani not related to anorectal pathology, the remaining forty-seven (ninety-four percent) obtained a satisfactory re-

sponse. The preparation was also used in the postoperative course of another group of fifteen patients recovering from hemorrhoidectomies, with definite amelioration of pain and more rapid healing than is usual in such cases. Although the procedure was tried in only ten patients, it would appear that the substitution of the steroid-containing suppository for the Vaseline gauze pack after hemorrhoidectomies is an excellent technique for the control of postoperative edema, inflammation and discomfort.

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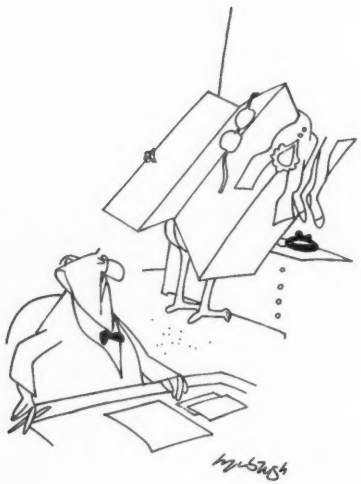
Division of Surgical Research
136 Street and Lenox Avenue



President's Page

Recently the Eastern Section of the International Academy of Proctology held an all day meeting at St. Francis Hospital, Jersey City, New Jersey. This was an excellent one day Seminar by members of the Hospital's Visiting and Consulting Staff.

The theme of the meeting was Diagnostic Problems in Coloproctology. Despite transportation difficulties the meeting was well attended. The speakers covered in a short time some of the most difficult diagnostic problems in our specialty and did so with such clarity and interest that many of us regretted the meeting couldn't continue for another day.

The Sister Superior and her Staff did all in their power to make our visit one that we will long remember. A delicious luncheon was served to all of the guests. Later we were conducted on a tour of the hospital. We were shown an ultramodern "Intensive Care Unit" named in honor of our Secretary General Dr. Earl Halligan.

Dr. Louis Perkel arranged the Program and was Chairman for the day.

From my own viewpoint I feel these one day regional meetings are of tremendous importance to the future of the Academy.

Recently the membership has heard some discussion on the possibility of the Academy considering a name change to the American College of Proctology. There are many who favor such a change; there are others who oppose it. The final decision depends on the will of the Fellows of the Society. However, if you entertain the thought of such a change you must realize the responsibility

that goes with it. No longer can the Fellowship depend on a very few to arrange Academic progress and carry on the business activities of the organization.

It becomes the responsibility of each and every member of the organization to bear his share of responsibility for elevating the standard of the Society to the highest possible level.

Every Fellow must assume responsibility for the selection of the officers and employees of the organization, and be as liberal with their constructive efforts as they are with their criticism.

A single Annual Teaching Seminar will not suffice. There must be many sectional meetings of the type held at St. Francis Hospital. We must do all in our power to stimulate interest among our Foreign Chapters and support their sectional meetings as enthusiastically as we hope they will support ours.

Whether you are in favor of such a name change or opposed to it you should attend the 13th Annual Teaching Seminar and make your feelings known.

Your program Committee has prepared a splendid meeting.

I look forward to seeing the largest attendance ever at the Chicago Meeting.

ALFRED L. SOLOW, M.D.

EMOTIONAL ASPECTS AND PERSONALITY PATTERNS

ULCERATIVE COLITIS

MARTHA BRUNNER-ORNE, M.D.
Boston, Massachusetts

The problem of ulcerative colitis focuses attention on the question of interrelationship of psychic and organic disease. Illness should be regarded from the standpoint of the whole organism, and modern psychiatry and medicine have given up the idea of dichotomy, and consider the body and its reactions as the result of internal, external, and psychic stimuli. In ulcerative colitis, the psychological factors represent one essential part of a complicated psychosomatic disorder. The gastrointestinal tract seems particularly susceptible to psychosomatic manifestations. Oral as well as anal frustrations manifest themselves in disturbances of the gastrointestinal system.

The fact that ulcerative colitis occurs in an area normally inhabited by various types of bacteria makes the evaluation of the role of specific bacteria in the pathogenesis of this disorder particularly difficult. I should like to refer to a recent paper of Louis Weinstein, from the Department of Medicine, Tufts University, where he discusses how various micro-organisms have been suspected of causing this disease. Several, specific bacteria have been thought at one time or another to be etiologic agents, including Bargen's displostreptococcus, dysentery bacilli, and Bacteroides necrophorus, etc. Summarizing the evidence available, Weinstein comes to the conclusion that the bacteriological studies of ulcerative colitis have shown that the organisms involved are normally present in the intestinal tract. He theorizes that three alternatives are possible: alterations in physiological activity provoked by unknown conditions may make this organism invasive. More likely, ulcerative colitis may be initiated by unknown factors, and is then continued and made worse by invasion of normal intestinal flora. The third possibility: the disease may be completely unrelated to bacterial infection, although bacteria may invade the primary lesions and cause complications. The failure to incriminate specific bacteria as direct etiologic factors in ulcerative co-

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Dr. Brunner-Orne is Medical Director, Westwood Lodge, Westwood, Massachusetts and Chief Psychiatrist, New England Hospital, Boston, Massachusetts.

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litis encourages speculation and theories that emotional factors may play an essential part in the pathogenesis of this disease. Recent studies, and particularly a comprehensive review by Engel, comment upon many of these points. His material is based upon seven hundred patients with ulcerative colitis reported in the literature, and includes thirty-nine carefully studied patients of his own. Engel tries to establish typical personality profiles, and I should like to comment on these since I have had an opportunity to find similar characteristics in my own case material gathered through years of practice.

Many of the cases show a very close attachment, a very dependent relationship to one person, usually the mother or a mother substitute, which could also be termed as fixation on a parent, infantile dependence, but which could be termed best as a symbiotic relation. One interesting and important factor is the interdependence of these two persons. The mother or her substitute is usually deeply involved in this relationship.

There is an impressive consistency in the description of the mothers of patients with ulcerative colitis. In general, the mothers are described as dominating, rigid, strict, cold, and punitive. The female patients are in general more critical in judging their mothers. Men, although describing them as domineering, are more likely to find them kind and considerate, always concerned about their wellbeing. They are usually described by both male and female patients as unhappy, gloomy women, perfectionists, constantly dissatisfied with their own and their children's accomplishments. They are complainers, pessimistic, and have a tendency to assume the role of a martyr. They sacrifice themselves and suffer for the health and welfare of the child. These mothers, who display their martyrdom, mobilize guilt reactions on the part of the patient. One has the impression that the majority of these mothers display masochistic characteristics, and the patients seem to be somewhat "in tune" with the dynamics of the mother's needs.

Some patients submit passively to the mother's domination, and many authors have been impressed with the unconscious gains these mothers derive from the illness of their children. It assures complete dependence and also gratification for their masochistic needs, and many patients report that their mothers were very willing and anxious to inspect and regulate the patient's diet and bowel movements, thus encouraging the patient's regressive tendencies. They also become quite preoccupied and eager to do the right thing for the patient, and mothers own health becomes sometimes better than ever. It is notable that many mothers insist upon taking care of their sick, adult daughters and sons, even if there is no need for it.

Much less information is available about the fathers of these patients. In general, the fathers may be presented as gentle and kind, but passive and usually ineffective. On the other hand, there are also exceptions, and fathers are sometimes described as punitive, threatening, and very virile. These descriptions are usually offered by male patients, and they feel the father regarded them as sissies. Siblings are often described as being more outgoing and very often favored by one parent.

Sexual adjustment is very often inadequate. Many women are frigid; men often assume a passive role. Many

patients like physical contact and wish to be cuddled like a child, rejecting the genital approach which they regard as dirty and disgusting. Rigid moral standards are common. In many instances the characteristics of the marital relationship could be predicted. Not infrequently, the mother-in-law, who actually was the primary object of attraction, closely resembles the mother for whom she serves as a substitute while the spouse is being treated more like a sibling.

At this point it might be of interest to consider the premorbid bowel history. Material indicative of intense conflictural relations with the parents regarding bowel activity is prominent in the history of some patients but totally absent in others. Some patients report their parents' intense interest in their child's bowel movement, but no comprehensive conclusions can be obtained from material available. Summarizing the personality pattern, it can be stated that patients show defects in personality structure antedating the onset of colitis and a characteristic type of restricted relationship with people, rather consistent psychopathology of the mothers, and the failure to achieve full heterosexual development. In addition to this, we often find compulsive obsessive traits. Patients are often meticulous, pedantic, self-conscious, and have a tendency to paranoid symptoms like apprehension and ideas of reference.

Very often, the onset of the disease is precipitated by situations where the patient is overwhelmed by despair and hopelessness. Separation from the person with whom he had a dependency relationship, or this person's death, may coincide with the onset of symptoms. When mounting responsibilities, as in marriage, or connected with the birth of children, bring pressure on the patient, the onset of ulcerative colitis may occur. The initial symptoms so well known to you all, bloody stools preceeding diarrhea when the disease starts in the descending colon, or initial diarrhea and cramps when the process starts in the ascending or transverse colon, are of great significance. When we try to establish the exact time of the onset of the disease, so important because of the meaning of the concomitant psychic trauma, attention must be paid to any deviation from the usual bowel activity.

You are, I am sure, well informed about the methods and results of the medical and surgical treatment of ulcerative colitis. Since this disease is a psychosomatic syndrome, it cannot be sufficient to treat the somatic aspect alone, because, as long as the underlying psychological driving forces are not alleviated, recurrences must be expected. We have learned in psychiatry to realize that it is not enough to remove the symptom without attempting to understand its real meaning and the dynamics of the psychosomatic disturbance. You may have heard the expression "somatization," which means that a conflict might be displaced from the psychological sphere to a body symptom. In fact, the phrase "psychosomatic medicine" implies this concept. In another type of neurosis where patients have resorted to alcohol as a defense mechanism, we feel that to achieve and to maintain sobriety is the immediate goal but not the only one. Somehow, alcohol serves a purpose. It was one kind of adjustment to meet unbearable life situations on a "drink-as-you-go" basis. If we take this crutch away,

we have to provide temporarily a less harmful substitute as an immediate measure, and as a long range goal we try to help the individual to develop new reaction patterns, to achieve maturity when the normal development has been interfered with at an earlier state of life, such as, for instance, a broken home, loss of a parent, physical injury, or by less dramatic and less obvious incidents. Continuous frustration from lack of affection by a mother who is cold or too busy, or from parents who give everything that money can buy but not themselves, may lead to a sense of insecurity, to a lack of identification which may interfere with the development of a healthy, self-reliant personality pattern.

We feel that it is almost a mistake to ask an alcoholic to stop, without providing substitutes and a long range psychotherapeutic program. Very often we have found that alcoholics who were able to stop drinking without follow-up treatment developed other symptoms like ulcer, ulcerative colitis or even a frank psychotic episode. I think the same trend of thought should be applied to any condition which we consider as of psychosomatic origin.

Similarly, as in alcoholism, or in any case of psychoneurosis, we should try to study the life history of the patient, his psychodynamics and his present life situation. Not only the past is responsible for one's reactions but also the present, the status in the family and at work, the relationship between husband and wife and in-laws. Situations resembling frustrating experiences in childhood, so-called repetitive situations, may cause abnormally exaggerated reactions. For instance, frustration by the boss may mobilize repressed emotions created by a strict non-relenting father during childhood.

At this point, I would like to discuss briefly a fundamental concept which I found helpful when explained to patients in individual or group sessions on the level of their comprehension.

Id, Ego and Superego This concept might be helpful to understand that some people who have everything—what you and I would consider worthwhile to live for—may be depressed and frustrated because their own superego is not satisfied. This pressure from within is a dynamic factor of tremendous impact on our self-concept and on our actions and reactions. Even the educator and clergyman are directing their efforts not toward the superego, which is so often strong and rigid, but towards the ego, to give it more strength to be able to live up to the demands of the superego. I very often quote Albert Schweitzer who certainly has a tremendous superego, but at the same time this outstanding ego strength to live up to his high goals.

There are very few Albert Schweitzers; so what can we do to help the average human being to adjust better not only to life but to his own demands and needs?

Emotional disturbances frequently occur when one or both parents failed the patient in the past and, in the psychotherapeutic situation, we provide a mother or father figure, thus facilitating the maturation of the personality arrested in its development. The patient, of course, has to make his adjustment, but it is easier when he is not alone, when he has a feeling that you are standing by with all you can offer —kindness, wisdom, understanding, patience. You have to establish a close

rapport with the patient—a working relationship—so that he learns to verbalize his feelings, his fears, his goals; first the conscious one and finally the repressed one may emerge from the unconscious. In this close contact, you, too, (the doctor) may suddenly grasp mechanisms which you haven't understood before, and you may just catch on, what might be called an "aha reaction." It depends now on your experience and your judgment whether you should share this immediately with your patient or rather let him find it out for himself under careful guidance.

A younger psychiatrist might be carried away and perhaps overtax the endurance of his patient. He has to learn not to throw it at him but to let him find out himself and to recognize the importance of right timing.

Our goal is to free the patient not only from his overt symptoms but from the dark forces behind them. Though the patient has to go through this experience intellectually and emotionally, he needs somebody to stand by, somebody he trusts, respects, admires and even hates at times. It is very important never to give him the opportunity to distrust you. You may be human but magnanimous, and at the same time not neglectful. With one or two wrong moves, a great deal of work can be destroyed.

Psychotherapy is at present widely acclaimed. Many techniques have been developed, directive and non-directive. Psychodynamic principles are used, not only in the psychoanalytic situation, but in psychotherapeutic sessions where common sense and immediate life situations are taken into consideration. It is somewhat controversial whether psychotherapy is an art or a science. I think it involves elements of both. It requires kindness, sensitivity, patience and perceptiveness. Just as an actor only performs well if he understands and lives the part, so the psychiatrist must understand and almost live the life of his patient without getting too involved. Only recently we have learned to evaluate the great impact of counter-transference, that is, the involvement of the psychiatrist or doctor who works in such an intimate relationship with the patient. If progress is slow or absent, it does not necessarily mean that the physician is deficient, and instead of having a punitive or resentful attitude, occasionally it is advisable to recognize one's limitations or circumstances which block the development of the necessary rapport, and a change of therapist might be the solution.

The psychotherapeutic goal is usually a far-reaching one and we can't expect immediate results as far as insight and readaptation are concerned. Predictions don't always come true. The worst cases sometimes respond almost miraculously, and milder ones might be the disappointing ones.

Conclusion

Psychotherapy has become a valuable adjunct in the treatment of emotional and psychosomatic disturbances. The time might be not too far distant when it will also be used as prophylaxis, and consultations at an early stage may perhaps prevent the formation of many psychosomatic disorders.

88 Marlborough Street

HIRAM B. BENJAMIN, M.D.*
JOSEPH V. HERZOG, M.D.
CRESENCIANO F. MENDOZA, M.D.

Milwaukee, Wisconsin

The Ano-Transabdominal Method

Team Effort in the Removal of Polyps of the Colon Above the Twenty-four Centimeter Level

The surgical approach to polyps of the colon above the twenty-four centimeter level has always been a critical problem to the surgeon. As a rule, this diagnosis is made by the roentgenologist in a routine study of the colon. On occasions, the patient presents himself because of rectal bleeding, but a proctoscopic examination reveals no pathology except for gross blood coming down into the tip of the scope from above. At surgery, the sigmoid and descending colon, having previously been emptied, are milked through the thumb and fingers in search of the polyp. The discovery of the polyp is more difficult if the patient is obese.

All too often, the polyp has an exceedingly long pedicle and when the intestine is opened over this structure, a second opening may be necessary to reach and attack the pedicle. Polyps may be present even though they are not demonstrated by an x-ray contrast study. Foley et al. worked on this problem with considerable success with their intracolonic transilluminator.[3] In 1953, we presented a method of treating malignant tumors of the rectosigmoid. This method treated with a limited area and did not solve the problem of polyps above this level.[1]

This problem was still unsolved until a cardiac patient presented himself for gallbladder surgery, at which time it was discovered that he also had a polyp above the twenty-four centimeter level.

Colotomy for Polypectomy is a surgical procedure that can lead to major complications. This type of intervention, of necessity, requires a well-prepared colon.[2] Closure of the intestine must be proper to avoid leakage and contamination. This is easily performed in the thin person, but in the obese individual, it is rather difficult. Palpation of the polyp in the obese patient is difficult. The small, the flat and the soft polyps are too often missed by transabdominal palpation.

Materials and Methods: The preparation of the patient with polyps for

From the Marquette University School of Medicine and Evangelical Deaconess Hospital, Milwaukee, Wisconsin.

* Associate Professor of Anatomy.

surgery begins three days prior to the operative date. The necessary laboratory chemical survey is done and the patient's chemistry is adjusted to as near normal as possible. The patient is typed and blood on a standby basis is made available. The patient is given enemata daily in the knee-chest position and an intestinal preparation of Aureomycin 250 mg., t.i.d., p.c. and sodium Sulfathalidine in gram doses, t.i.d. At the same time the patient is placed on a non-residue diet. On the night prior to the operation, the patient is given Nembutal one, one-half grains and the preoperative medication is ordered by the medical anesthetist. In the operating room, the patient is placed on his back and the abdomen is washed with pHisohex and then painted with Zephiran acetone solution. The abdomen is then sprayed with adhesive (Vi-Drape spray) and covered with a transparent plastic drape (Vi-Drape). The usual laparotomy draping is then done. A left paramedian incision is made and the rectus muscle is retracted laterally. The incision is sufficiently large to enable the surgeon to completely explore the abdomen. The colon is then palpated for polyps. If no other major pathology is found, the patient's knees are placed in stirrups without disturbing the laparotomy drapes. The proctologist then places himself on a foot stool and inserts the sigmoidoscope up to the sacral promontory. The surgeon then lifts the scope through the abdomen and within the bowel above the sacral prominence and then threads the sigmoid and descending colon over the scope. This method enables the proctologist to examine the descending colon up to the splenic flexure. The entire left colon is thoroughly inspected for other polyps and further pathology. The scope is then again advanced to the upper limits of the descending colon and, as the proctologist retreats the scope, the polyps are pushed into the lumen of the scope where the pedicle of the polyp may be readily transected and the bleeding controlled by coagulation. The pathologist is given the specimen for a frozen section report. If this report is negative for carcinoma, the abdomen is closed. On the other hand if it proves to be malignant, the abdominal incision is extended for the surgical procedure deemed necessary without loss of time or change of drape.

Case Reports: Two cases are cited to point out the advantages of this method.

Case 1. Patient M.C., a dentist, was reviewed because of gas pains. A gallbladder full of calculi was found and, at the same time, two polyps were found in the descending colon. The lower of the two polyps was easily removed from below in the proctologist's office. The polyp above the twenty-four centimeter level was located at the level of the upper pole of the left kidney. This polyp he was unable to remove. The patient entered the hospital for the removal of his gallbladder. Through a right subcostal incision, the abdomen was entered and completely explored. The polyp was not demonstrated because of the large collection of fat over the left colon. A conventional cholecystectomy was then done. The patient's legs were then placed in stirrups without disturbing the drapes and the proctologist, sitting on a foot stool, inserted the scope. The scope was arrested at the sacral prominence. The surgeon through the laparotomy wound lifted the scope over the sacral prominence and then threaded

the sigmoid and descending colon over the sigmoidoscope as it was advanced under guidance of the surgeon. This step was repeated two times before the polyp was found. The polyp was then snared and the bleeding arrested by coagulation. The polyp was benign. The abdomen was then closed in the regular fashion. The patient made an uneventful recovery.

Case 2. This male adult, 68-years-of-age, entered the hospital because of rectal bleeding and gas pains. The patient had a negative proctological examination and the barium enema showed a large polyp in the descending colon just below the splenic flexure. This case was prepared as was Case 1, and was explored for pathology other than the known polyp. All the abdominal findings were negative. Again the legs were placed in stirrups without disturbing the drapes. The proctologist inserted the scope and inspected the rectum, sigmoid and descending colon. The solitary polyp was then removed. The bleeding points were coagulated and the left paramedian incision was closed in the routine fashion. The patient's hospital stay was uneventful and the patient was discharged on the sixth postoperative day.

Summary

With the advent of major surgical procedures such as open heart surgery, vascular replacements, segmental perfusions, pelvic eventrations, a new feature was introduced by the medical profession—namely the surgical team where more than one capable surgeon works with another capable surgeon to complete a surgical procedure.

This same effort is used here to transform a complex surgical operation into a relatively simple one. This ano-transabdominal method for the removal of polyps in the descending colon above the twenty-four centimeter level has the following advantages:

1. Thorough investigation of the rectum, sigmoid and descending colon up to the splenic flexure under direct vision.

2. Avoids abdominal contamination.

3. Polyps not visualized by x-ray can be discovered by direct vision.

4. Avoids the formation of strictures or sinus tracts as a direct result of segmental resection of the colon for polyps.

5. Converts a complex surgical procedure into a comparatively simple one.

6. Allows the surgeon to do a major surgical operation and at the same time remove polyps in a simple manner from the descending colon above the twenty-four centimeter level.

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1. Benjamin Hiram B. and Wagner, Marvin: Surgery of Carcinoma of the Rectosigmoid in Selected Cases, Wisconsin Medical Journal 52 (5):277-280, (May) 1952.

2. Buchman, Elwood and Bergland, Earl M.: Bacteremia Following Sigmoidoscopy, Amer. Heart Jour. 60:863-866, (Dec.) 1960.

3. Foley, Thomas J., Schutte, Albert G. and Selzer, Jack D.: Intracolonic Transillumination, A.M.A. Archives of Surgery, 79:915-916, (Dec.) 1959.

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Converzyme Liquid, Ascher
Indications: For patients suffering from nervous dyspepsia and functional digestive disorders due to lack of proper enzymes and emulsifiers.
Description: Each teaspoonful contains standardized proteolytic enzyme (papain), 10 mg.; standardized amylolytic enzyme, 80 mg.; homatropine methylbromide, 2.5 mg.; d-sorbitol, 4.4 Gm.
Dosage: One or two teaspoonfuls with or after meals.
Supply: Pint bottles.

Declomycin, 75 Mg., Lederle
Indications: Broad-spectrum antibiotic therapy.
Description: Demethylchlortetracycline in 75 mg. capsules. New dosage form was designed primarily for children.
Dosage: For adults—600 mg. per day, divided into two or four doses. For children—3 to 6 mg. daily per pound of body weight dependent upon the severity of the disease.
Supply: 25 capsules.

Enarax 5, Roerig
Indications: For treating peptic ulcer and other gastro-intestinal disorders.
Description: New dosage form contains 5 mg. of oxyphencyclimine hydrochloride and 25 mg. hydroxyzine hydrochloride. (Former product will be called Enarax 10.)
Dosage: One tablet twice daily, preferably in the morning and before retiring at night.
Supply: Sixty tablets.

Largon Injection, Wyeth
Indications: Sedative and adjunct to anesthesia and analgesia in obstretrics and in surgery.
Description: Each cc. contains 20 mg. propiomazine HCl, with 1 mg. sodium formaldehyde sulfoxylate, 6 mg. sodium acetate, and 1 mg. acetic acid in water for injection U.S.P.
Dosage: Intramuscularly or intravenously, 10 to 30 mg.
Supply: 1 cc. ampuls and 2 cc. ampuls.

Lida-Mantle-HC, Dome
Indications: For dermatologic use. Combination of a topical anesthetic plus steroid. Provides relief from itching and pain complicated by inflammation.
Description: Incorporates hydrocortisone alcohol with lidocaine in Acid Mantle vehicle.
Dosage: Gently apply a thin layer over affected area several times daily.
Supply: One-half oz. and one oz.

Neo-Lida-Mantle,HC, Dome
Indications: For topical anesthesic, antipruritic, and anti-infective action.
Description: Combines neomycin, hydrocortisone alcohol, lidocaine, in Acid Mantle vehicle.
Dosage: Gently apply a thin layer over affected areas several times daily.
Supply: One-half oz. and one oz.

Setrol, Flint-Eaton
Indication: In treating spastic colitis and general stomach disorders.
Description: A new anticholinergic to control acid secretion, pH and pain. Oxyphencyclimine HCl.
Dosage: One tablet twice daily a.m. and p.m.
Supply: Fifty tablets.

Tao Ready Mixed, Roerig
Indications: Oral treatment of a variety of infections caused by pneumococci, staphylococci, and streptococci.
Description: Triacetyloleandomycin, a medium-spectrum antibiotic, in a convenient preconstituted form with a pleasant raspberry flavor. Each teaspoon is equivalent to 125 mg. of oleandomycin.
Dosage: Adults—From 250 mg. to 500 mg. q.i.d.; pediatric dose—3 to 5 mg. per pound of body weight q. 6h.
Supply: 60 cc.

Vesprin Suppositories, Squibb
Indications: For control and prevention of nausea and vomiting associated with a variety of clinical disorders.
Description: Contains 35 mg. (child's) or 70 mg. (adults) per suppository.
Dosage: Adults—One 70-mg. suppository, may be repeated every 12 h. s.o.s.; child's—below 40 lbs., ½ 35-mg. suppository; 40 to 70 lbs., one suppository; over 70 lbs., one adult 70-mg. suppository.
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BOOK REVIEWS FOR PROCTOLOGISTS

EXPERIENCES WITH CONGENITAL BILIARY ATRESIA by Julian A. Sterling, M.D., Sc.D., F.A.C.S., Senior Attending Surgeon, Albert Einstein Medical Center; Assistant Professor of Surgery, Graduate School of Medicine, University of Pennsylvania; Assistant Professor of Surgery, Temple University School of Medicine, Philadelphia, Pennsylvania. Pages —61. Price $5.50. Published by Charles C. Thomas, Springfield, Illinois. August 10, 1960.

This is a brief monograph on an uncommon subject. As the author states, "except for a rare patient who has survived for a few years as a green, potbellied, sickly dwarf, the infant born with a biliary atresia dies within a year." The paper presented by this author represents clinical experience with his first ten cases.

It is an interesting and well illustrated report. The author concludes that, "if there be a bile lake which drains any portion of normal liver and if such bile can be directed into the intestinal tract, then it may be possible for the infant with biliary atresia to be returned to normal homeostasis."

This detailed report will assist surgeons who meet this problem in their clinical practice. Multiple hepatostomies and formation of an internal bowel fistula is the only hope for survival for babies with total bile duct atresia.

PSYCHOLOGICAL TECHNIQUES IN DIAGNOSIS AND EVALUATION by Theodore C. Kahn, Ph.D., Diplomate in Clinical Psychology, American Board of Examiners in Professional Psychology; Chief, Psychological Service, United States Air Force Hospital, Wiesbade, Germany; Lecturer in Psychology and Education, University of Maryland European Division and Martin B. Giffen, M.D., Diplomate of the American Board of Psychiatry and Neurology; Chief, Psychiatric Service, United States Air Force Hospital, Wiesbade, Germany; Consultant in Psychiatry, Surgeon, United States Air Forces in Europe. Pages 145. Price $6.50. Published by the Pergamon Press, New York, Oxford, London, Paris, 1960.

Those who have occasion to refer to psychological testing material will be interested in this little book. The physician, attorney, educator, etc., who is interested in a relatively non-technical consideration of what the psychologist is, how he functions, and how he arrives at his clinical conclusions, will find this book of interest and value.

The clinical psychologist will also find it useful insofar as it is an up-to-date review of psychological methodology. The psychiatrist, of course, who deals with the reports on the psychologist, would do well to include this volume in his library.

PRACTICAL CLINICAL MANAGEMENT OF ELECTROLYTE DISORDERS. By William J. Grace, Director of Medicine, the St. Vincent Hospital of the City of New York; Professor of Clinical Medicine, New York University School of Medicine. Formerly, Associate Professor of Medicine, Cornell University Medical College. Published by Appleton-Century-Crofts, Inc., 1960. Pages 126.

This monograph is an excellent guide to bedside clinical management of the electrolyte problems. The clinical syndromes of the electrolyte disturbances are briefly and clearly explained. There are illustrative case reports, pointing up the fact that this book is written primarily from the clinical viewpoint. There are ten chapters, covering such subjects as vomiting or prolonged gastric suction, heart failure, diabetes, etc. and the mechanisms of their electrolyte disturbances.

The book is well written, the approach is sound, and the subject is made more palatable for those who have difficulty understanding physiological or chemically-oriented discussions of the electrolyte disturbances.

This book is particularly recommended for the clinician.

TEXTBOOK OF MEDICAL PHYSIOLOGY, Second Edition, Illustrated. By Arthur C. Guyton, M.D., Professor and Chairman of the Department of Physiology and Biophysics, University of Mississippi School of Medicine. Second Edition, with illustrations. Published by W. B. Saunders Company, 1961. Philadelphia and London. Pages 1153.

The second edition of this textbook is an excellent revision of the first. Not only is the text material rewritten, revised and to a large extent new, but there are also many new figures (200).

The approach to human physiology in terms of interrelated organ-processes is interesting and useful. Unity of the interrelated functions of the different organ systems of the body is stressed. It is important that the subject be presented as a functional study, and the author has succeeded in doing so.

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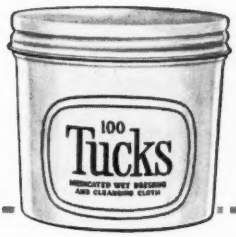

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Therapeutic Abstracts

Critical Study of Flocculation Hepatic Tests — Their Replacement by Sandor's Recticulo-Endothelial Slip

By E. Aron and R. Vargues (Tours), *La Presse Médicale, No. 4, Pp. 103-104, 1960.*

All flocculation hepatic tests used in the diagnosis of liver diseases consist in the precipitation of insoluble globulins or euglobulins. The globulin fraction qualitatively evidenced with such a procedure depends chiefly from the pH of the action. Sandor's reticuloendothelial slip establishes euglobulins precipitation diagram in relation with the pH, giving thus a more exact picture of qualitative and quantitative variations of serum globulins. Because of its precision and simplicity, this slip will replace the flocculation tests and is worth of being considered henceforth as the standard non-specific serum reaction that procures the more valuable laboratory results in hepatology.

In viral hepatitis, euglobulins γ and β are increased. In obstructive jaundice, euglobulins β and α are increased. Diagram is normal in cholestatic hepatitis and in some patients with jaundice by inoculation or after medicaments (chlorpromazine).

In portal cirrhosis, α euglobulins are decreased and γ euglobulins are increased.

Guy Albot

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